

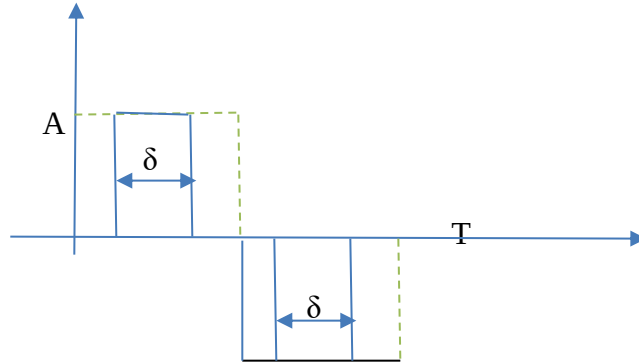
GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VI (NEW) EXAMINATION – WINTER 2024****Subject Code:3162413****Date:20-11-2024****Subject Name:Power Electronics Circuits - II****Time:02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		Marks
Q.1	(a) Draw diagrams of single phase half bridge and full bridge inverter.	03
	(b) Explain working of single phase full bridge inverter with gate pulses and output voltage waveforms with R load.	04
	(c) Explain working of single phase full bridge inverter with gate pulses and input and output voltage and current waveforms with R-L load.	07
Q.2	(a) Define THD with respect to waveform quality of inverter output.	03
	(b) Define modulation index and its significance.	04
	(c) Discuss sine PWM technique with necessary diagrams.	07
	OR	
	(c) Explain full wave (bidirectional) AC voltage controller with necessary diagrams.	07
Q.3	(a) Give comparison of integral cycle control and phase angle control for AC power control.	03
	(b) Describe importance of dead band in inverter circuits.	04
	(c) Derive equation for r.m.s output voltage of single phase full wave A.C voltage controller.	07
	OR	
Q.3	(a) Clarify the requirement of reverse conducting diodes in inverter.	03
	(b) List out various methods for control of inverters.	04
	(c) Discuss 180° mode of conduction of three phase inverter with delta connected load.	07
Q.4	(a) Give advantages of 180° mode of conduction over 120° mode.	03
	(b) Give comparison of Voltage source inverter and current source inverter.	04
	(c) Explain two stage sequence controller with resistive load.	07
	OR	
Q.4	(a) Explain unipolar and bipolar PWM with necessary diagrams.	03
	(b) Discuss series resonant inverters with unidirectional switches in brief.	04
	(c) Derive THD of single phase square wave inverter output voltage.	07
Q.5	(a) List applications of AC voltage controllers.	03
	(b) Discuss integral cycle control of AC voltage control.	04
	(c) Discuss single phase to single phase cycloconverter with resistive load.	07

OR

- Q.5** **(a)** Explain third harmonic injection PWM in brief. **03**
 (b) Derive the r.m.s value of wave form given below. **04**



- (c)** Describe space vector and space vector modulation for three phase inverter. **07**
